Amendments to the Claims:

Misnumbered new claims 121-156 have been renumbered by the Examiner as new claims 122-157. Claims 1-121 have been canceled.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-121 (canceled)

122. (currently amended) A method of training a model pattern for use in geometric pattern matching, the method comprising:

obtaining a digital image of an object;

detecting boundary points in the digital image; and

generating information about the boundary points for inclusion in said model pattern, the information being stored as a function of position within a region of the image that includes the boundary points.

123 (new): The method of claim 122, wherein the information is stored as a function of real-valued position within the region of the image that includes the boundary points.

124 (new): The method of claim 122, wherein the information is stored at discrete points on a grid using a two-dimensional array.

125 (new): The method of claim 122, wherein generating information about the boundary points results in information that is a vector-valued function of position within the region of the image that includes the boundary points.

126 (currently amended): The method of claim ~~126~~ 125, wherein the vector-valued function relates a plurality of at least two-dimensional positions to a plurality of respective displacement vectors.

127 (new): The method of claim 126, wherein each displacement vector indicates a distance and direction from a two-dimensional position to a nearest point along a pattern boundary formed by the boundary points.

128 (new): The method of claim 125, wherein the vector-valued function relates a plurality of two-dimensional positions and associated directions to a plurality of respective displacement vectors.

129 (new): The method of claim 128, wherein each displacement vector indicates distance and direction from a two-dimensional position to a nearest point along a pattern boundary that is substantially in the associated direction.

130 (new): The method of claim 122, wherein generating the information about the boundary points includes a sequence of propagation events, each propagation event providing additional information at respective additional positions within the region of the image that includes the boundary points.

131 (new): The method of claim 130, wherein positions within the region of the image that includes the boundary points are initialized to a pre-defined value before the sequence of propagation events.

132 (new): The method of claim 131, wherein the pre-defined value is one of a value independent of any boundary point, and a value dependent on at least one boundary point.

133 (currently amended): The method of claim 130, wherein the sequence of propagating events ~~occur~~ occurs using a plurality of phases.

134 (currently amended): The method of claim 122, wherein generating information about the boundary points includes:

~~determine~~ determining neighboring boundary points for each boundary point.

135 (new): The method of claim 134, wherein generating information about the boundary points includes:

connecting neighboring boundary points to provide at least one chain of boundary points.

136 (currently amended): The method of claim 135, wherein generating information about the boundary ~~point~~ points includes:

identifying and cataloging each chain of boundary points.

137 (new): The method of claim 136, wherein identifying and cataloging includes:

for each chain, determining a starting boundary point, an ending boundary point, a total gradient magnitude, and number of boundary points in the chain.

138 (new): The method of claim 135, wherein generating information about the boundary points includes:

identifying and ignoring weak chains.

139 (new): The method of claim 138, wherein identifying and ignoring weak chains includes:

using gradient magnitude.

140 (new): The method of claim 135, wherein generating information about the boundary points includes:

dividing chains into segments.

141 (new): The method of claim 140, wherein dividing chains into segments includes:

dividing chains into segments based on curvature.

142. (new): The method of claim 135, wherein generating information about the boundary points includes:

using at least one chain of boundary points to carry out at least one propagation event, each propagation event providing additional information at respective additional positions within the region of the image that includes the boundary points.

143 (new): The method of claim 142, wherein there are four propagation events.

144 (new): The method of claim ~~135~~ 143, wherein each propagation event provides a plurality of vectors, each vector indicating a distance and direction toward a pattern boundary that includes a plurality of pattern boundary points.

145 (new): The method of claim 144, wherein each propagation event provides a plurality of vectors that are disposed at a greater distance from the pattern boundary that includes a plurality of pattern boundary points than the plurality of vectors provided by a previous propagation event.

146 (new): The method of claim 142, wherein the number of propagation events is determined by a parameter.

147 (currently amended): A method of training a model pattern for use in geometric pattern matching, the method comprising:

obtaining a digital image of an object;

detecting boundary points in the digital image;

connecting the boundary points to provide at least one chain of boundary points; and

using at least one chain of boundary points to carry out at least one propagation event, each propagation event providing ~~additional information~~ a plurality of vectors, each vector indicating a distance and direction towards the at least one chain of pattern boundary points at respective additional positions within the region of the image that includes the boundary points.

148 (new): The method of claim 147, wherein connecting the boundary points includes:

identifying neighboring boundary points for each boundary point.

149 (currently amended): The method of claim 147, before using at least one chain of boundary points, further including:

for each chain, determining a starting boundary point, an ending boundary point, a total gradient magnitude, and a number of boundary points in the chain.

150 (new): The method of claim 147, before using at least one chain of boundary points, further including:

identifying and ignoring weak chains.

151 (new): The method of claim 150, wherein identifying and ignoring weak chains includes:

identifying and ignoring weak chains using gradient magnitude.

152 (new): The method of claim 147, before using at least one chain of boundary points, further including:

dividing chains into segments.

153 (new): The method of claim 152, wherein dividing chains into segments includes:

dividing chains into segments based on curvature.

154 (currently amended): The method of claim 147, wherein using at least one chain of boundary points to carry out at least one propagation event includes:

performing four propagation events.

155 (canceled)

156 (new): The method of claim 147, wherein each propagation event provides a plurality of vectors that are disposed at a greater distance from the pattern boundary that includes a plurality of pattern boundary points than the plurality of vectors provided by a previous propagation event.

157 (currently amended): The method of claim 147, wherein the number of propagation events is determined by a user-settable parameter.